

## Original Article

### Assessment of assess perinatal mortality and its causes

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#### ABSTRACT:

**Aim:** To assess perinatal mortality and its causes. **Methodology:** Ninety ANC attendant pregnant mothers were included in the study. Parameter such as place of residence, labor onset, mode of delivery, number of ANC visit, birth weight (gram), gestational age, parity, maternal ever hemoglobin level during pregnancy and onset of pregnancy induced hypertension was recorded. **Results:** Age group 18-28 years had 38, 28-38 years had 40 and >38 years had 12 patients. There were 50 patients from rural back ground out of which 25 died and 40 from urban 40 and 12 died. 5 out of 25 spontaneous, 30 out of induced and 2 out of direct CS died. 26 out of Instrumental, 8 out of SVD and 3 out of elective mode of delivery patients died. 2 out of 25 having one, 13 out of 22 having two, 12 out of 20 having three and 10 out of 23 having four number of ANC visits patients died. 24 out of 54 with <2500 birth weight (gram) and 13 out of 36 having >2500 birth weight died. 4 out of 40 and 34 out of 50 with primigravida and multigravida parity died. 19 out of 34 with <10, 12 out of 22 with 10-11.9 and 6 out of 34 with >12 maternal ever hemoglobin level during pregnancy died. 6 out of 20 pre- partum, 20 out of 34 intra- partum and 11 out of 36 post- partum with onset of pregnancy induced hypertension died. **Conclusion:** There was high perinatal mortality. High parity, low in number of antenatal care visits, low birth weight, low maternal hemoglobin level, and pre-partum onset of pregnancy induced hypertension were independent factors which increase the perinatal mortality.

**Key words:** perinatal mortality, pregnancy induced hypertension, Multigravida

Received: 19 June, 2018

Accepted: 21 July, 2018

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**This article may be cited as:** Rayannavar J, Ramdas NB, Kumar RCK. Assessment of assess perinatal mortality and its causes. J Adv Med Dent Scie Res 2018;6(8):197-200.

#### INTRODUCTION

Availability and quality of healthcare of both mother and newborn is reflected in the perinatal mortality rate. Perinatal mortality remains one of the devastating pregnancy outcomes for millions of families in low-and-middle-income countries.<sup>1</sup> Every year, there are up to 5.9 million perinatal deaths worldwide. Ninety-eight percent of perinatal deaths happen in the developing world.<sup>2</sup> There is substantial geographical variation in the distribution of causes of death, which is partly explained by complex pathways where socioeconomic factors play a central role.<sup>3</sup>

In developing countries, labor onset, mode of delivery, gestational age, pregnancy induced hypertension, and low in number of antenatal care (ANC) visits are the commonly mentioned factors which increase the risk of perinatal mortality.<sup>4</sup> In addition; maternal hemoglobin level and provision of anticonvulsant and antihypertensive were the commonly contributing factors for perinatal mortality.<sup>5</sup> Neonatal infections, infections during

pregnancy, asphyxia and maternal anemia are associated with increased perinatal mortality (PNM). Achievement of Millennium Development Goals (MDG) 4 and 5 requires a focus on antenatal, intrapartum and postpartum perinatal and maternal care.<sup>6</sup> These goals are linked because maternal and perinatal outcomes are inherently linked, and programs addressing improving the care of one often has impact on the outcomes the other, particularly centred around management of hypertension and intrapartum care.<sup>7,8</sup> The present study was conducted to assess perinatal mortality and its causes.

#### METHODOLOGY

A sum total of ninetyANC attendant pregnant mothers were included in the study. Ethical review and research committee approved the study. All enrolled patients gave their written consent for participation. Data such as name, age etc. was recorded. Parameter such as place of residence, labor onset, mode of delivery, number of ANC visit, birth weight (gram),

gestational age, parity, maternal ever hemoglobin level during pregnancy and onset of pregnancy induced hypertension was recorded. Results were

subjected to statistical analysis using Mann Whitney U test. P value < 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

Age group (years)	Number	P value
18-28	38	0.18
28-38	40	
>38	12	

Age group 18-28 years had 38, 28-38 years had 40 and >38 years had 12 patients (Table I).

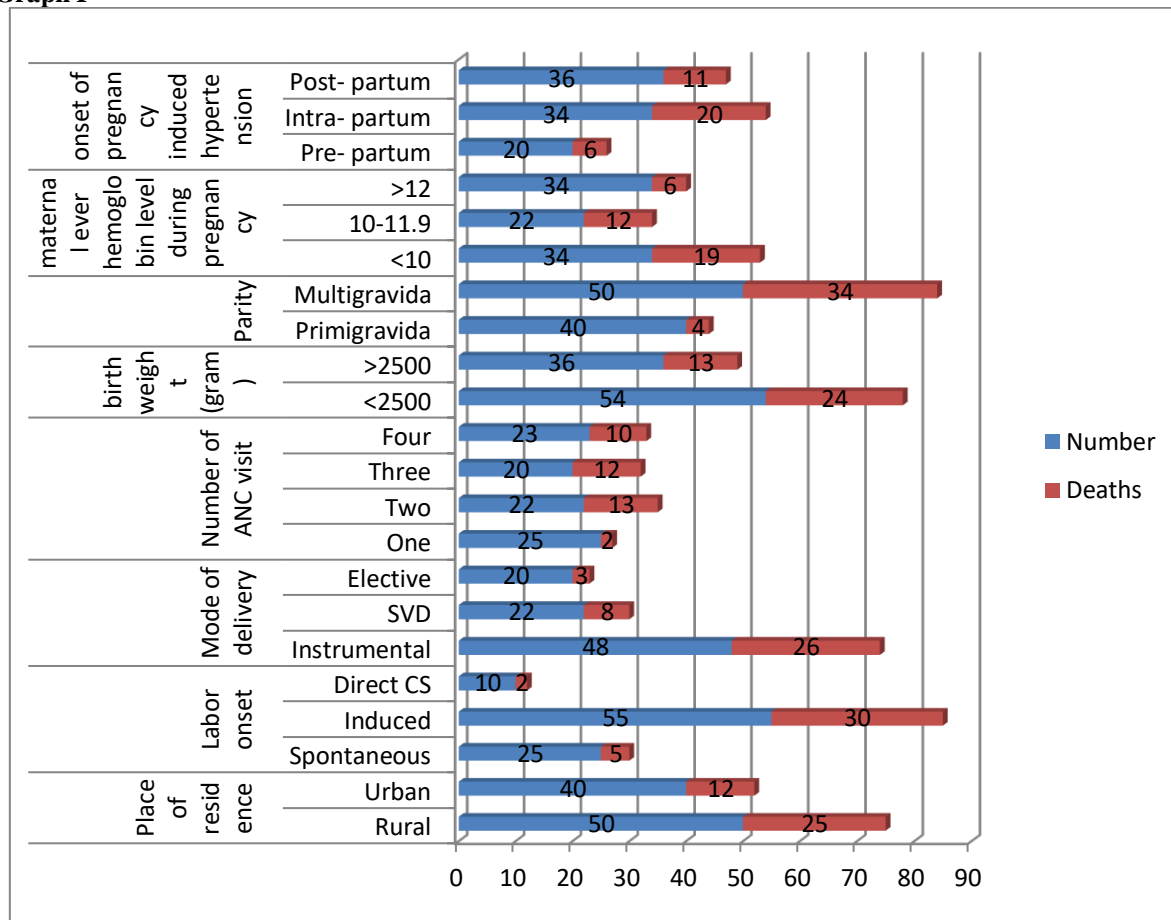
**Table II Obstetric characteristics of perinatal mortality**

Parameters	Variables	Number	Deaths	COR (95%)
Place of residence	Rural	50	25	1.54
	Urban	40	12	
Labor onset	Spontaneous	25	5	1.84
	Induced	55	30	
	Direct CS	10	2	
Mode of delivery	Instrumental	48	26	1.40
	SVD	22	8	
	Elective	20	3	
Number of ANC visit	One	25	2	2.68
	Two	22	13	
	Three	20	12	
	Four	23	10	
birth weight (gram)	<2500	54	24	1.19
	>2500	36	13	
Parity	Primigravida	40	4	2.04
	Multigravida	50	34	
maternal ever hemoglobin level during pregnancy	<10	34	19	1.74
	10-11.9	22	12	
	>12	34	6	
onset of pregnancy induced hypertension	Pre- partum	20	6	3.52
	Intra- partum	34	20	
	Post- partum	36	11	

There were 50 patients from rural back ground out of which 25 died and 40 from urban 40 and 12 died. 5 out of 25 spontaneous, 30 out of induced and 2 out of direct CS died. 26 out of Instrumental, 8 out of SVD and 3 out of elective mode of delivery patients died. 2 out of 25 having one, 13 out of 22 having two, 12 out of 20 having three and 10 out of 23 having four number of ANC visits patients died. 24 out of 54 with

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Graph I



**DISCUSSION**

Perinatal mortality remains globally unacceptably high with up to three million stillbirths and three million neonatal deaths every year. Most of the infant deaths occur soon after birth<sup>9,10</sup>; many of them in the first 28 days (neonatal deaths) and most of those during the first 7 days (early neonatal deaths [ENDs]).<sup>11,12</sup> The World Health Organization (WHO) has defined stillbirth (SB) as when a baby is born with no signs of life with a birth weight over 1000 g, gestational age is more than or equal to 28 weeks, and/or, body length more than 35 cm. Perinatal mortality (PM) includes both SBs and ENDs.<sup>13,14,15</sup> The present study was conducted to assess perinatal mortality and its causes.

Our results showed that age group 18-28 years had 38, 28-38 years had 40 and >38 years had 12 patients. Cherian AG et al<sup>16</sup> aimed to estimate stillbirth (SB), early neonatal, and PM rates and its causes. There were 20,704 births after 28 weeks gestation and where the fetus weighed more than 1000 g of which 285 were SBs. There were 20,419 live births with 229 early neonatal deaths. There was a significant decline in PM rate from 32 per 1000 to 11 per 1000. There was a decrease in the small for gestational age fetuses from 20% to 12.5%. The main cause for SBs was antepartum hypoxia (34.4%) and fetal growth disorders (26.3%). Complications of intrapartum

events contributed to 32.8% of the early neonatal deaths.

Our results showed that there were 50 patients from rural background out of which 25 died and 40 from urban 40 and 12 died. 5 out of 25 spontaneous, 30 out of induced and 2 out of direct CS died. 26 out of instrumental, 8 out of SVD and 3 out of elective mode of delivery patients died. 2 out of 25 having one, 13 out of 22 having two, 12 out of 20 having three and 10 out of 23 having four number of ANC visits patients died. 24 out of 54 with <2500 birth weight (gram) and 13 out of 36 having >2500 birth weight died. 4 out of 40 and 34 out of 50 with primigravida and multigravida parity died. 19 out of 34 with <10, 12 out of 22 with 10-11.9 and 6 out of 34 with >12 maternal ever hemoglobin level during pregnancy died. 6 out of 20 pre-partum, 20 out of 34 intra-partum and 11 out of 36 post-partum with onset of pregnancy induced hypertension died. Allanson et al<sup>17</sup> found that there were 23503 births and 687 late perinatal deaths (stillbirths of ≥ 1000gr or ≥ 28 weeks gestation and early neonatal deaths up to day 7 of neonatal life) in the study period. The rate of maternal complication in macerated stillbirths, fresh stillbirths and early neonatal deaths was 50.4%, 50.7% and 25.8% respectively. Mothers in the other late perinatal deaths were healthy. Maternal hypertension and obstetric haemorrhage were more likely in stillbirths

( $p = < 0.01$ ). The main causes of neonatal death were related to immaturity (48.7%) and hypoxia (40.6%). 173 (25.2%) of all late perinatal deaths had a birth weight less than the 10th centile for gestational age. Dessu et al<sup>18</sup> determined the magnitude of perinatal mortality and associated factors among mothers who attended antenatal care. The prevalence of perinatal mortality was 12.6% (95% CI: 11.80, 13.40) and grand multiparity (AOR: 7.40; 95% CI: 2.77, 20.26), having one antenatal visit (AOR: 4.40; 95% CI: 1.64, 11.91), spontaneous vaginal delivery (AOR: 0.36; 95% CI: 0.16, 0.82), being pre-term (AOR: 6.78; 95% CI: 2.41, 19.09), birth weight <2,500 gram (AOR: 3.10; 95% CI: 1.48, 6.46), maternal ever hemoglobin level <10 gm/dl (AOR: 4.04; 95% CI: 1.91, 8.57), and pre-partum onset of pregnancy induced hypertension (AOR: 4.01; 95% CI: 2.01, 6.08) were statistically significant in the multivariable logistic regression mode.

## CONCLUSION

There was high perinatal mortality. High parity, low in number of antenatal care visits, low birth weight, low maternal hemoglobin level, and pre-partum onset of pregnancy induced hypertension were independent factors which increase the perinatal mortality.

## REFERENCES

- Cooper PA. The challenge of reducing neonatal mortality in low- and middle income countries. *Pediatrics*. 2014;133:4.
- Chopra M, Daviaud E, Pattinson RC, Fonn S, Lawn JE. Saving the lives of South Africa's mothers, babies, and children: can the health system deliver? *Lancet*. 2009;374(9692):835–46. doi:10.1016/S0140-6736(09)61123-5.
- Kinney MV, Kerber KJ, Black RE, Cohen B, Nkrumah F, Coovadia H, et al. Sub-Saharan Africa's mothers, newborns, and children: where and why do they die? *PLoS Med*. 2010;7(6):e1000294. doi:10.1371/journal.pmed.1000294.
- Friberg I, Kinney MV, Lawn JE, Kerber KJ, Odubanjo MO, Bergh AM, et al. Sub-Saharan Africa's mothers, newborns, and children: how many lives could be saved with targeted health interventions? *PLoS Med*. 2010;7(6):e1000295.
- Lawn JE, Yakoob MY, Haws RA, Soomro T, Darmstadt GL, Bhutta ZA. 3.2 million stillbirths: Epidemiology and overview of the evidence review. *BMC Pregnancy Childbirth* 2009;9 Suppl 1:S2.
- Casterline JB. Collecting data on pregnancy loss: A review of evidence from the World Fertility Survey. *Stud FamPlann* 1989;20:81-95.
- Ngoc NT, Merialdi M, Abdel-Aleem H, Carroli G, Purwar M, Zavaleta N, et al. Causes of stillbirths and early neonatal deaths: Data from 7993 pregnancies in six developing countries. *Bull World Health Organ* 2006;84:699-705.
- Campbell O, Gipson R, el-Mohandes A, Issa AH, Matta N, Mansour E, et al. The Egypt national perinatal/neonatal mortality study 2000. *J Perinatol* 2004;24:284-9.
- Ogunyemi D, Jackson U, Buyske S, et al. Clinical and pathologic correlates of stillbirths in a single institution. *ActaObstetGynecolScand* 1998;77:722–8.
- Huang DY, Usher RH, Kramer MS, et al. Determinants of unexplained antepartum fetal deaths. *ObstetGynecol* 2000;95: 215–21. 14. Little RE, Weinberg CR. Risk factors for antepartum and intrapartum stillbirth. *Am J Epidemiol* 1993;137:1177–89.
- Froen JF, Arnestad M, Frey K, et al. Risk factors for sudden intrauterine unexplained death: epidemiologic characteristics of singleton cases in Oslo, Norway, 1986–1995. *Am J ObstetGynecol* 2001;184:694–702.
- Conde-Agudelo A, Belizian JM, Diaz-Rossello JL. Epidemiology of fetal death in Latin America. *ActaObstetGynecolScand* 2000;79:371–8.
- Maleckiene L, Nadisauskiene R, Stankeviciene I, et al. A casereferent study on fetal bacteremia and late fetal death of unknown etiology in Lithuania. *ActaObstetGynecolScand* 2000;79:1069–74.
- Raymond EG, Cnattingius S, Kiely JL. Effects of maternal age, parity, and smoking on the risk of stillbirth. *Br J ObstetGynaecol* 1994;101:301–6.
- Cnattingius S, Bergstrom R, Lipworth L, et al. Prepregnancy weight and risk of adverse pregnancy outcome. *N Engl J Med* 1998;338:147–52.
- Cherian AG, Tryphena C, George K, Abraham VJ, Mohan VR, Prasad JH. Perinatal mortality and its causes in a rural block in Tamil Nadu, Southern India: A community-based nonconcurrent cohort study. *Indian J Community Med* 2022;47:12-7.
- Allanson ER, Muller M, Pattinson RC. Causes of perinatal mortality and associated maternal complications in a South African province: challenges in predicting poor outcomes. *BMC pregnancy and childbirth*. 2015 Dec;15(1):1-7.
- Dessu S, Dawit Z. Perinatal mortality and associated factors among antenatal care attended pregnant mothers at public hospitals in Gamo Zone, Southern Ethiopia. *Frontiers in Pediatrics*. 2020 Dec 23;8:586747.